

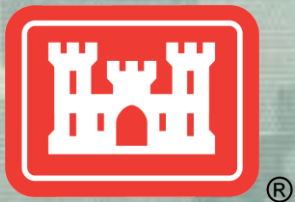
Restoration of Wetland Habitats Dominated by *Phragmites australis*

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US Army Corps of Engineers
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Outline Slide

- **Mission**
- **Restoration**
- **Implications to other mission areas**
- **Invasive Species Impact**
- **Proposed Project at Times Beach**
- **Long Term Controls**
- **Questions**



CIVIL WORKS MISSIONS:

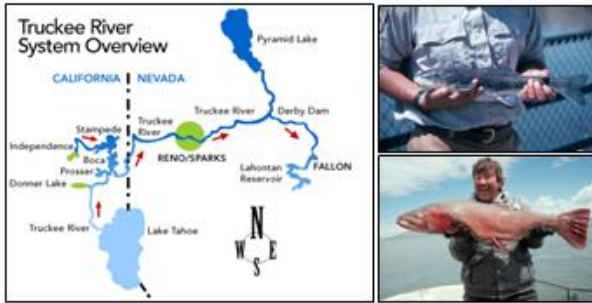
- ❑ Navigation
- ❑ Flood Damage Reduction
- ❑ Ecosystem Restoration



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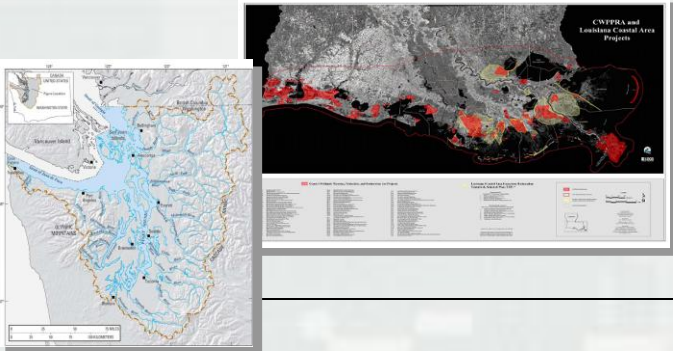
Ecosystem Restoration Mission

Water Resources Development Act of 1986



Restore significant **ecosystem function, structure, and dynamic processes** that have been degraded

- Nationally and regionally significant
- Wetlands, riparian and other floodplain and **aquatic systems**



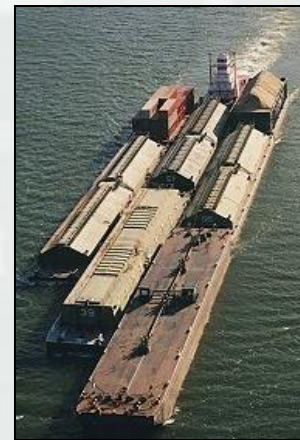
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The Corps Navigation Mission

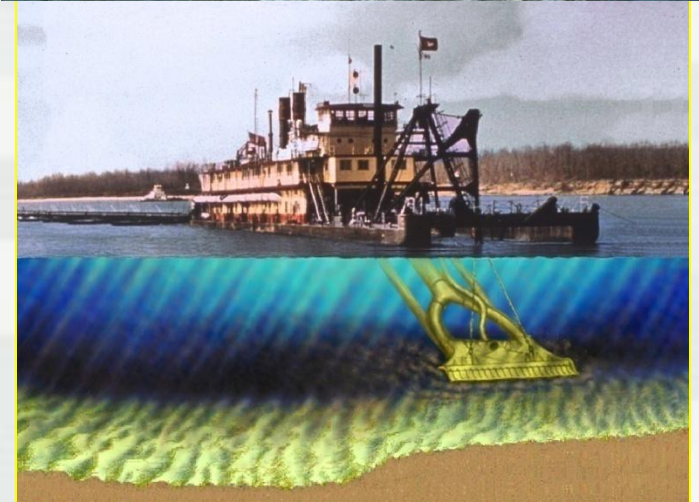
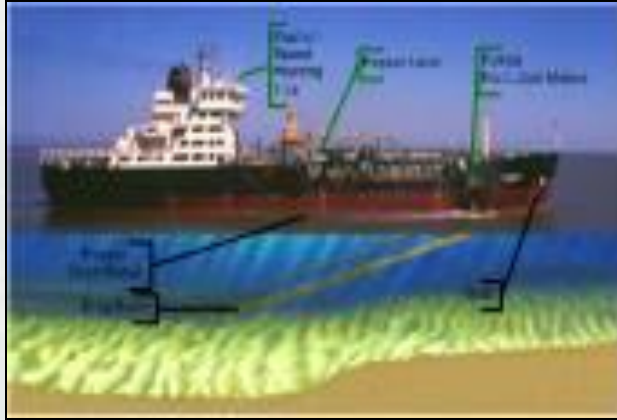


Provide safe, reliable, efficient effective and environmentally sustainable waterborne transportation system

- movement of commerce,
- national security needs,
- recreation



Dredging Operations



**Material is moved from
the dredge to a
containment facility**



Containment Facilities



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Facilities Can Become Dominated By Invasive Species



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Need To Utilize The Material Beneficially



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Establishment of Native Plant Communities

(Small Plantings)



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Establishment of Native Plant Communities

(Large Plantings)



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Mission Areas that will benefit from the management of *Phragmites australis*

- **Ecosystem Restoration --- Invasive species inhibit our ability to restore significant ecosystem *function, structure, and dynamic processes* that have been degraded**
- **Navigation --- Invasive species hamper dredging operations and limit the beneficial use of dredge material**



Invasive Species Problems



Melaleuca



Waterhyacinth



Arundo



Purple Loosestrife



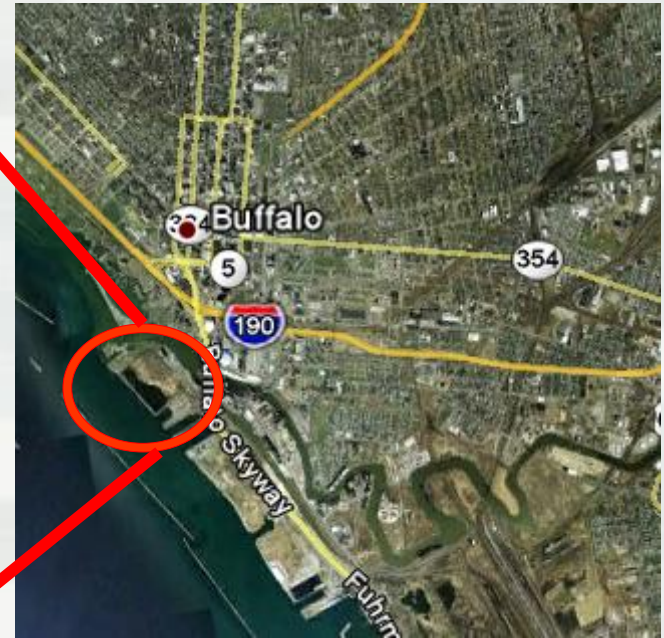
Phragmites

Management Technologies

- Chemical (Available)
- Mechanical (Available)
- Burning (Available)
- Biological (Not Available)
- Flooding (Available)



Times Beach Proposed Work Site



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Phragmites



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Phragmites



Proposed Management Approach

- **Physical Treatments**
 - ▶ Mowing
 - ▶ Multiple Mows
- **Chemical Treatment**
 - ▶ Ground treatments using spray/wick application
 - ▶ Primarily fall applications
 - ▶ One and Two - year applications evaluated
- **Biological Treatment**
 - ▶ None at the present time
- **Combinations of Chemical and Physical Treatments**
- **Long Term Assessment Protocol**

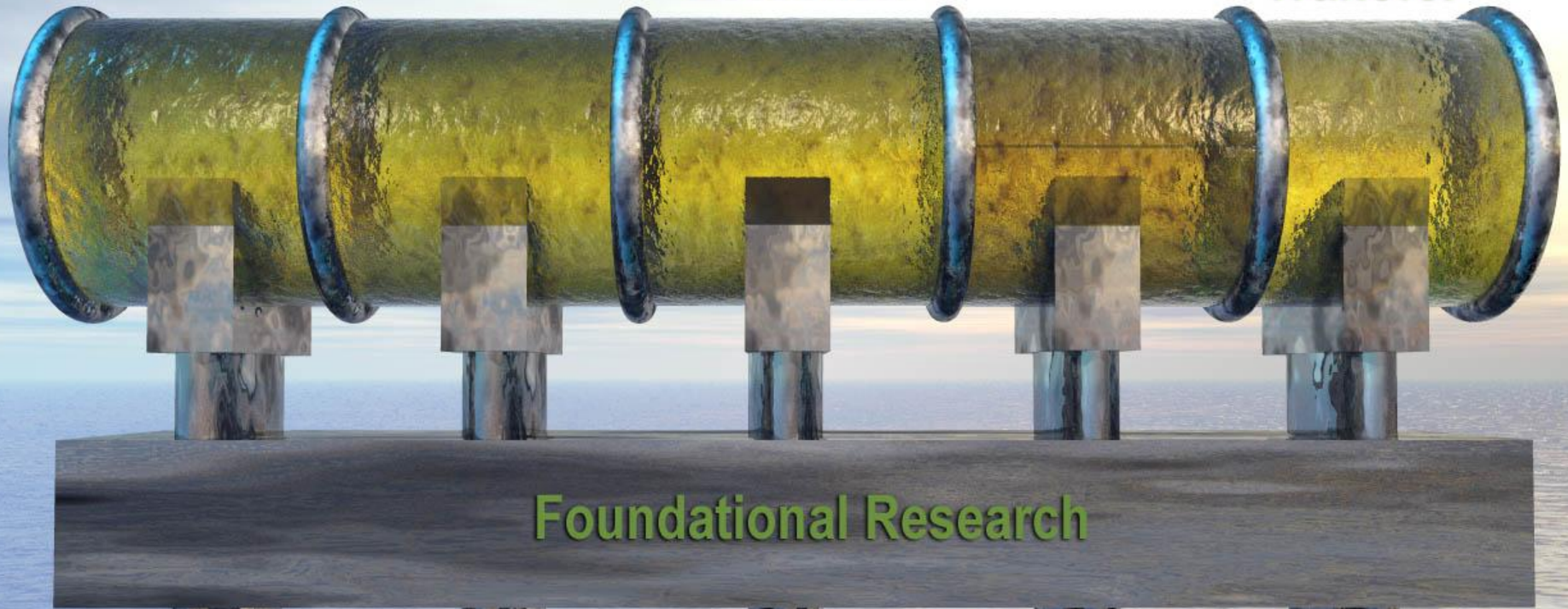


- **Chemical Treatment**
 - ▶ Ground treatments using spray/wick application
 - ▶ Primarily fall applications
 - ▶ One and Two - year applications evaluated
- **Proposed Chemicals**
 - ▶ Glyphosate – AquaMaster or Redeo (Standard)
 - ▶ Imazapyr – Habitat (Standard)
 - ▶ Imazamox – Clearcast (New)
 - ▶ Penoxsulam – Galleon (New)
- **Combinations of Chemical Treatments**



Biocontrol Pipeline

Overseas Quarantine Release Establish Evaluation Tech Transfer



Long Term Controls

Noctuid Shoot Boring Moths

- *Arenostola phragmitidis*
- *Archanara neurica*
- *Archanara dissoluta*
- *Archanara geminipuncta*

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Department of Natural Resources
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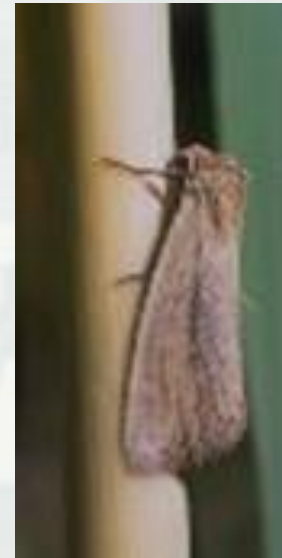
Arenostola phragmitidis



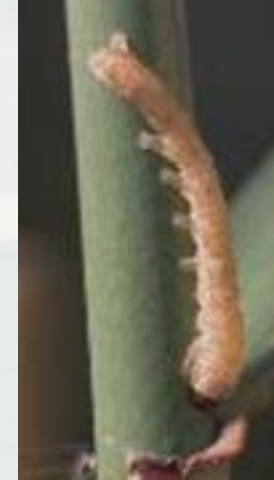
Archanara neurica



Archanara dissoluta



Archanara geminipuncta



Questions



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